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ABSTRACT

A summary is presented of the major conclusions of seven regional conferences on high technology and the two-year college conducted by the National Postsecondary Alliance. The conclusions were drawn from the addresses of representatives from more than 40 firms, who responded to questions concerning their companies' involvement with high technology and the role of the two-year college in preparing students for jobs. Their opinions, predictions, and suggestions included the following: (1) industry has become heavily involved in training people for high-technology jobs; (2) computers are at the core of all high-tech fields; (3) not all employees will need to know computer programming, but programming jobs will increase dramatically; (4) the medical/health field will not add many jobs for two-year college graduates trained as pharmaceutical and biomedical technicians; (5) robots will take over many jobs; (6) computer-assisted design is revolutionizing drafting, design, and engineering professions; (7) the semiconductor industry is still growing and will continue to create technical jobs; (8) graduates of 6-month proprietary schools often perform better on the job than two-year college graduates; (9) there will be many openings for technicians in the communications field; (10) the aerospace industry and the military are leading the way in technical education; and (11) the high costs and short lifespan of computer software are causing a predicament in the software industry. (LL)

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Industry Speaks to Two-Year Colleges about High Technology

by

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Staying up-to-date in postsecondary occupational education these days means high technology.

When the 32 member colleges of the National Postsecondary Alliance set high technology as their theme and focus for 1982-83, their Alliance director was put on the spot. His challenge--how to help a consortium of colleges, spread out from Alaska to Florida and from Texas to Illinois, revitalize themselves and their technical training programs to suit current and future high-technology industry employment needs.

The answer was a series of seven regional two-day conferences during which industry leaders spoke, and college administrators listened. Industry representatives gladly agreed to participate. More than 40 companies became involved. They included: Control Data, IBM, General Motors, Bell Laboratories, Rockwell International, Motorola, Cincinnati Milacron, Westinghouse, Martin-Marietta, Bendix, Sony, International Laser Systems, Western Electric, Texas Instruments, Bechtel, United Technologies, Sandoz, Fermilab, Mead, and others.

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Industry was asked to respond to two basic questions: (1) What does your company do using high technology? and (2) What can two-year colleges do to prepare students for jobs in companies like yours?

The seven conferences were filled with terms such as robotics, CAD/CAM, lasers, fiber optics, electronics, telecommunications, biomedical engineering, microprocessors, videodiscs, and microcomputers. Each speaker was given approximately one hour; question and answer sessions lasted another hour to provide for in-depth understanding. Conferences were held in Dallas, Texas; Nelsonville, Ohio; Chicago, Illinois; Saddlebrook, New Jersey; Orlando, Florida, Oakland, California; and Greensboro, North Carolina. Approximately 800 two-year college leaders attended.

Here are some of the things learned from industry during these national conferences on high technology. What follows is a brief list of twelve straightforward conclusions about what was learned. These conclusions are necessarily oversimplified, but they do represent the best thinking of the experts who spoke. Statements are not attributed to any specific expert or to any specific company, but it's not important to do so. The statements stand on their own merits. Here is one person's interpretation of the twelve most important things learned from the seven high-technology conferences:

1. INDUSTRY IS INTO HIGH-TECH TRAINING--Industry has now entered the field of education in a big way to train people for high-technology jobs. Why? Because it is not satisfied with the performance of many people we train--even though we're the professional educators. In the process, industry often makes a profit or at least saves money by doing its own training. Industry

will soon be a major force in competition with colleges for students in high-technology education.

2. COMPUTERS ARE AT THE CORE--Computers are at the core of all high-technology fields. Microprocessor chips are being used everywhere and are revolutionizing manufacturing, communications, entertainment, and service occupations.

3. NOT EVERYONE NEEDS TO KNOW PROGRAMMING--Not everyone will need to know computer programming, but it's hard to imagine an occupation that will not soon require some keyboarding skills without excessive computer-phobia. Personal computers and telephone modems are now commonplace.

4. PROGRAMMING JOBS WILL INCREASE DRAMATICALLY--Although not everyone will need to know programming, the number of programming jobs will increase dramatically. Despite high unemployment overall, one-quarter of a million good programmers could find jobs this year, and that figure will rise to nearly one million a year by 1990.

5. NO PHARMACEUTICAL/BIOMEDICAL TECHNICIANS--A negative signal came to us from the pharmaceutical and biomedical engineering fields. The two-year technician doesn't fit in so well here, it appears. Granted that hospitals will continue to employ associate's degree x-ray and lab technicians, as well as nurses

for awhile, yet the medical/health field will not add a large number of jobs for two-year college graduates as a result of high technology. Any large growth will be in professional, not paraprofessional jobs.

6. ROBOTICS HAS COME OF AGE--Robotics has finally come of age in industry after nearly 30 years of struggling to be born. Robots are not just a fad; they will take over many dirty, dangerous, repetitive jobs, and they will, in the process, create an equal number of new jobs needed to program, maintain, and design robots. The reprogrammable robot will make it economically feasible to manufacture more specialty products in small amounts.
7. NO MORE DRAFTING TABLES--CAD (that's computer-assisted design) is in the process of revolutionizing drafting, design, and engineering jobs. Don't buy stock in companies that make drafting tables. The CAD system will soon do to the T-square and other drafting tools what the calculator did to the slide rule. Training for drafters, designers, and engineers will still include some board experience, but it must also provide some computer-assisted equipment experience.
8. SEMICONDUCTORS ARE STILL HOT--The semiconductor industry is still "hot." As more chips with larger memories are demanded, the industry will continue to search for ways to turn silicon sand into random access memory devices and mass produce them at low cost. Many

technical jobs will be created to design, manufacture, and test semiconductor devices.

9. PROPRIETARY SCHOOLS DO IT BETTER--The electronics industry is frequently disappointed with the graduates of two-year colleges compared to the graduates of six-months proprietary schools. The challenge to upgrade college faculty and equipment in electronics is vitally important!

10. COMMUNICATIONS IS EXPLODING--The communications industry is growing and changing rapidly. Wires and cables for transporting sound and pictures have begun to yield to microwaves, optical fibers, and satellites. We can now make personal telephone calls from commercial planes in flight. The microprocessor chip is making possible so many innovations that few telecommunications jobs of five years ago will be in existence five years from now. There will be many openings for technicians in the communications field. Perhaps a new associate degree program should be designed and offered in communications technology.

11. AEROSPACE AND MILITARY LEAD THE WAY--The aerospace industry, especially the military portion of it, is setting trends and creating innovations in the use of lasers, computers, CAD/CAM, robcts, and also in the training and development of its employees through videodisc and other interactive, computer-assisted,

television-mediated learning systems. The military has become a first-rate technical educator.

12. SOFTWARE IS IN A PREDICAMENT--The software industry is in a predicament. Programming the required user-friendly software takes a great deal of time and consequently a great deal of money. The costs of development are difficult to recover from sales when product demand changes almost daily. Eventually, there will be some major breakthroughs to allow users to interface directly with computers through high level languages and even through the spoken word. The development of such systems will eventually reduce the demand for programmers, although this won't happen until after the turn of the century. In the meantime everyone is "passing the buck" about who whould develop software. The hardware manufacturers want users to spend thousands of hours creating a program, then trade it for a new printer. The publishing houses are afraid to invest the necessary money into anything so "soft," since all their experience is in "hard" copy. Educators don't have in place a viable reward system for software development. Professors get tenure if they publish a book, but no university reward for inventing a new Visicalc.

These twelve conclusions, opinions, predictions, or suggestions just listed are the significant ideas given by industry

leaders to two-year college administrators during our series of national conferences on high technology.

Conferences aimed at administrators are just the first step of the National Postsecondary Alliance in the fast-changing arena of high technology. No doubt, hands-on faculty workshops will be the next step. After that, who knows what?

Innovative two-year colleges, interested in high technology and anxious to join forces with other progressive postsecondary institutions, are invited to consider joining the National Postsecondary Alliance.

NOTE: Dr. James P. Long directs the National Postsecondary Alliance, a nationwide consortium of community and technical colleges interested in staying on the cutting edge of postsecondary occupational education through cooperative offsets. He is employed at The Ohio State University's National Center for Research in Vocational Education as Senior Research Specialist. Earlier he served in a variety of two-year college administrative positions.

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